EOD TEST PROCEDURE

WP 003

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Dynamometer Power Absorption Determination	1 of 5
Originator	**Supersedes**
Terry Griggs	NA
Responsible Organization	**Computer Program**
Vehicle Testing	NA
Type of Test Report	**Data Form Number**
Form	Form WP 003-01
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Implementation Approval

Test Procedure Authorized by EPCN #146

Revision Description

Note: Specific brand names in EPA/EOD procedures are for reference only and are not an endorsement of those products.

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Attachments

1. Purpose

The purpose of this procedure is to document the steps required to perform a test vehicle Dynamometer Power Absorption Determination on an 8.65-inch twin-roll hydrokinetic dynamometer.

Form WP 003-01 is to be used with this procedure (see Attachment A).

2. Test Procedure

101 Locate the vehicle. Identify the vehicle by comparing the "Vehicle ID Number," on Form WP 003-01, to the VIN, usually located on the driver's side of the dashboard. If unable to find the VIN, notify the Vehicle Testing (VT) team leader.

102 Ensure that the "Vehicle Information" section is completely filled out. If it is not, notify the customer before proceeding.

103 Follow the steps listed on Form WP 003-01. Any time the vehicle needs to be moved, it may be driven. If any problems are encountered, contact the customer.

3. Acceptance Criteria

The following criteria must be met for the test to be valid:

3.1 The vehicle fuel tank must be drained and filled with test fuel to 40% of volume.

3.2 The vehicle drive axle weight must be within 50 lb of the "Track Vehicle Drive Axle WT."

3.3 The vehicle total weight must be within 100 lb of the "Dyno ETW" weight.

3.4 The vehicle must soak at 68-86 °F for a minimum of 4 hours, immediately before the test.

3.5 The tire pressure for light-duty vehicles must be set to 45±1 psi or, if specified for trucks, the manufacturer's tire pressure ±1 psi.

3.6 The coastdown measurements must begin within 1 minute of the end of the Highway Fuel Economy Test (warmup cycle and sample cycle) or last coastdown.

3.7 The range for the three coastdowns (not necessarily consecutive) must be within 0.3 second of each other at each horsepower setting.

3.8 Form WP 003-01 is signed and dated by the technician who performed the procedure.

Dynamometer Power Absorption Determination

Vehicle Information: To be completed by customer requesting the test

Customer Name: _____ Date: _____

Vehicle ID Number: _____ Version #: _____ Model Year: _____

Manufacturer: _____ Manufacturer Code: _____

Manufacturer Drive-tire Size: _____ Manufacturer Tire Pressure: _____ psi

Track Vehicle ETW: _____ pounds Track Vehicle Drive Axle Wt: _____ pounds

Drive Axle: Front _____ Rear _____ Side Cooling Fan: Yes _____ No _____

Target Time: _____ seconds

Dyno ETW: _____ pounds Manufacturer DPA Value: _____ hp

Fuel Tank Volume: _____ gallons 40% Tank Volume: _____ gallons

1.0 Drain the vehicle fuel tank: _____ and fill to 40% of volume: _____

Number of Gallons Dispensed _____ Date: _____ Time: _____

2.0 Weigh the front axle, rear axle, and total vehicle. Record these data below and attach the weigh scale printout.

Front axle: _____ lb Rear axle: _____ lb Total: _____ lb

The vehicle drive axle weight must be within 50 lb of "Track Vehicle Drive Axle WT" and the total weight must be within 100 lb of the "Dyno ETW," if not, notify the customer.

3.0 Set and record the drive tire pressure to 50 psi or 5 psi above the manufacturer's tire pressure specification.

Drive-tire pressure set to _____ psi

4.0 Record the drive-tire size: _____

5.0 Park the vehicle in the soak area for a minimum of 4 hours to stabilize the tire temperature. Record the soak start and end dates and times.

Soak Start Date: _____ Time: _____ Soak End Date: _____ Time: _____

6.0 Drive the vehicle onto the dynamometer.

6.1 Position front cooling fan and driver's aid; adjust the tie-down cable so the slack is removed and there is approximately 2 inches of play at the center.

6.2 Position a side cooling fan, if side cooling fan "Yes" box is checked above.

6.3 For passenger cars, reduce the tire pressure to 45 ± 1 psi . For trucks, reduce the tire pressure to the vehicle manufacturer's tire pressure ± 1 psi. Do not add air pressure to the tires. If the air pressure is below 45 psi or recommended manufacturer's pressure, contact the VT supervisor.

Drive-tire final pressure setting _____ psi

7.0 Complete the following and record the data as required.

7.1 Set the dyno inertia weight to the "Dyno ETW."

Record the Dyno # _____ and the inertia weight setting _____ lb

7.2 On the coastdown chart (other side of this form), record the "Manufacturer DPA Value" on line 0 under the "Actual hp (Ahp)" header.

7.3 Look up the dyno indicated horsepower (Ihp) that corresponds to the manufacturer Ahp (from line 0) for that vehicle ETW. On the coastdown chart, record this thumbwheel value on line 0 under the "Thumbwheel hp (Ihp)" header.

7.4 Add or subtract horsepower from the manufacturer's Ahp as required on lines 1 through 6 in the coastdown chart. Record the calculated values under the "Ahp + or - hp" header.

Look up each Ihp that corresponds to these calculated Ahp values and record the corresponding dyno thumbwheel setting under the "Thumbwheel hp (Ihp)" header.

7.5 Set the dyno-indicated horsepower that corresponds to the actual horsepower recorded on line 0 of the coastdown chart.

7.6 Lower the dyno brake and verify that the correct flywheels are engaged.

7.7 Select the rear roll position on the dyno speed/power meter.

7.8 Select the "AUTOMATIC" and "COUNT" positions on the Quickcheck Timer. Ensure that the power has been on for a minimum of 15 minutes. If the power is not on, turn the power on and allow the unit to warm-up for 15 minutes.

8.0 Warm up the vehicle and dyno by driving an HFET (warm-up and sample).

9.0 Begin coastdown measurements within 1 minute of the HFET cycles ending or the last coastdown.

9.1 Accelerate at approximately 2 mph/sec to 64 -66 mph and hold that speed for 2-3 seconds.

9.2 Verify that the Quickcheck Timer has reset to zero.

9.3 Shift the vehicle to neutral and move your foot off the throttle. Do not press the brake pedal.

9.4 Allow the vehicle to coast down to 0 mph.

9.5 Under Coastdown #1, for the corresponding Ahp, record the Quickcheck time displayed.

9.6 Repeat Steps 9.1 through 9.5, recording the times under Coastdown #2, Coastdown #3, etc., until three coastdowns (not necessarily consecutive) are within 0.3 of a second of each other.

If the first three coastdowns are not within 0.3 of a second, switch the dyno speed/power meter to front roll, drive the vehicle to 50 mph, and verify that the hp reading is within ±0.2 of the thumbwheel value. Even if it is out-of-tolerance, continue the test sequence and when finished, notify the customer. Do not run more than five coastdowns at each horsepower. If unable to obtain the three coastdowns within 0.3 of a second, notify the VT supervisor. When you have the required number of coastdowns, go to Step 10.

10.0 Increase or decrease the thumbwheel horsepower setting as required in Lines 1 through 6. It is not necessary to stop the vehicle if a helper is available to make the thumbwheel adjustments.

11.0 Repeat Steps 9.1 through 10.0 until at least three coastdowns (not necessarily consecutive) are within 0.3 of a second of each other.

Coastdown Chart

	Actual hp (Ahp)	Ahp + or - hp	Thumbwheel hp (Ihp)	Time (seconds) Coastdown #1	Coastdown #2	Coastdown #3	Coastdown #4	Coastdown #5
0								
1	Ahp +0.5 hp							
2	Ahp -0.5 hp							
3	Ahp +1.0 hp							
4	Ahp -1.0 hp							
5	Ahp +1.5 hp							
6	Ahp -1.5 hp							

12.0 When completed, sign and date this form and submit the data to the test requester for processing.

Technician's Name: _____ Date: _____